



Ash Features from Present-day Activity at Stromboli

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The present-day explosive activity at Stromboli volcano (Aeolian Islands, Italy) is characterized by a relatively large variability of eruptive styles on a relatively small temporal and spatial scale. Despite volcanic ash is a common product of this explosive activity, few studies have been conducted so far on ash of Stromboli and in particular on the products of individual explosions. Here we focus on micro-scale textural observations of ash particles erupted from a number of different vents during three sampling campaigns. Component analysis under the binocular microscope reveal that ash from present-day activity at Stromboli is dominated by two main end-members of fragments with a wide variability of color and degree of surface alteration: blocky and dark, fragments (i.e. tachylite) and glassy, highly vesiculated and fluidal fragments (i.e. sideromelane). In addition, individual phenocrysts or composite fragments (crystals plus tachylite or sideromelane) and rare, highly altered accessory lithic fragments are also present. Thin section investigation show that tachylite has micro- to crypto-crystalline groundmass, while sideromelane is partially or totally glassy. Component and modal analyses reveal that, in the sampling period, sideromelane is the most abundant component only in one vent while the other vents erupted mainly tachylite-rich ash.

The morphology, micro-textures and chemical composition of particles surface were also analyzed using a Field Emission SEM equipped with EDS. In general, particle morphology and surface chemistry poorly discriminates between the different samples, while tachylite particles show a higher compactness, lower elongation, and more extensive overgrowth of secondary phases (mainly gypsum, sulphate and halide salts) in respect with sideromelane ones.